

OFFSHORE

Work Order ID 137583

\*137583\*

Page 1

October 07, 2015 10:36:33 AM

Item ID: D117-762-041

Accept

\*N900040100\*

Setup Start

\*NS1\*

Revision ID:

Item Name: Replacement Skidtube

Stop

\*NS2\*

Start Date: 10/7/2015 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 10/21/2015 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals:

Process Plan:

*Self*

Date:

20151007

Tooling:

Date:

Run Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

Draw Nbr

Revision Nbr

D3492

E

D3582

Rev B

100

Document Control

0.00

\*100\*

DC

DOCUMENT CONTROL

Memo

0.00

Doc.Control -USB or Paperwork

Photocopy bluefile &amp; type labels per PPP D117-762-041 CHG002

N/A - MGS OCT 23 2015

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
|--------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |

| Root Cause         |                          |                       |                          | FAULT CATEGORY         |                          |                                   |                          |
|--------------------|--------------------------|-----------------------|--------------------------|------------------------|--------------------------|-----------------------------------|--------------------------|
| Environment        | <input type="checkbox"/> | No Re-verification    | <input type="checkbox"/> | Pressure/Forced        | <input type="checkbox"/> | Temperature/Cure                  | <input type="checkbox"/> |
| Design             | <input type="checkbox"/> | Operator              | <input type="checkbox"/> | Bending                | <input type="checkbox"/> | Set-up                            | <input type="checkbox"/> |
| Doc/Data           | <input type="checkbox"/> | Offset/Setup          | <input type="checkbox"/> | Centre Not Concentric  | <input type="checkbox"/> | BOM/Route                         | <input type="checkbox"/> |
| Equip/Tooling      | <input type="checkbox"/> | Supplier              | <input type="checkbox"/> | Cracks                 | <input type="checkbox"/> | Broken/Damage/Defect              | <input type="checkbox"/> |
| Handling/Pre       | <input type="checkbox"/> | Training              | <input type="checkbox"/> | Crimp/Kink/Ripple/Wave | <input type="checkbox"/> | Inspection Incomplete/Unqualified | <input type="checkbox"/> |
| Material           | <input type="checkbox"/> | Use for Testing       | <input type="checkbox"/> | Cuffs                  | <input type="checkbox"/> | Contamination                     | <input type="checkbox"/> |
| Internal Transport | <input type="checkbox"/> | Poor Information      | <input type="checkbox"/> | Crushing               | <input type="checkbox"/> | Countersink                       | <input type="checkbox"/> |
| Tribal Knowledge   | <input type="checkbox"/> | Rushing               | <input type="checkbox"/> | Heat Treat             | <input type="checkbox"/> | Cut Too Short                     | <input type="checkbox"/> |
| LOA                | <input type="checkbox"/> | Product Improvement   | <input type="checkbox"/> | Wave/Twist in Tube     | <input type="checkbox"/> | Instructions Incomplete/Unclear   | <input type="checkbox"/> |
| Substation         | <input type="checkbox"/> | Process Improvement   | <input type="checkbox"/> | Marks/Chatter          | <input type="checkbox"/> | Drill Holes                       | <input type="checkbox"/> |
| Past Expiry Date   | <input type="checkbox"/> | Manufacturing Process | <input type="checkbox"/> | OTHER : _____          |                          |                                   |                          |
| Misidentified      | <input type="checkbox"/> | Past Due              | <input type="checkbox"/> |                        |                          |                                   |                          |

**Work Order ID 137583****\*137583\***

Page 2

October 07, 2015 10:36:33 AM

Item ID: D117-762-041

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Item Name: Replacement Skidtube

Stop **\*NS2\***Start Date: 10/7/2015 Start Qty: 1.00 **\*1\***

Cust Item ID:

Required Date: 10/21/2015 Req'd Qty: 1.00 **\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

130

0.00

**\*130\***

Skidtubes

0.02

Skidtubes

**Memo**

1-Cut Aft end using DT8185

2-Debur ends

3-Drill Aft Cap holes using DT8678 \*\*\* OPEN AFT CAP HOLE TO .187" \*\*\*

4-Locate DT 8973 from aft cap holes &amp; Drill Ground wire hole on top of Tube.

5-Install 3/16 cleco in Ground wire hole ,then drill all X-Bolt holes using 3/16" drill.

6-Drill pilot holes for wearplates using DT8900

7-Open wearplate holes to Ø19/64" (0.297") as per Dwg D3582.

8- open ground wear holes to 0.391" as per section B-B

9-Open Aft Cap holes using .209" drill.

10-Drill pilot holes for section D-D and E-E. Holes must be laid out by hand. Mark out Center line and make sure that 6.65 and 5.906 measurements are respected. Double check before drilling, do not open holes to finish size.

 15-10-13 15-10-14

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
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| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |

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| <b>Root Cause</b><br><div style="display: flex; justify-content: space-between;"> <div>           Environment <input type="checkbox"/><br/>           Design <input type="checkbox"/><br/>           Doc/Data <input type="checkbox"/><br/>           Equip/Tooling <input type="checkbox"/><br/>           Handling/Pre <input type="checkbox"/><br/>           Material <input type="checkbox"/><br/>           Internal Transport <input type="checkbox"/><br/>           Tribal Knowledge <input type="checkbox"/><br/>           LOA <input type="checkbox"/><br/>           Substation <input type="checkbox"/><br/>           Past Expiry Date <input type="checkbox"/><br/>           Misidentified <input type="checkbox"/> </div> <div>           No Re-verification <input type="checkbox"/><br/>           Operator <input type="checkbox"/><br/>           Offset/Setup <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Training <input type="checkbox"/><br/>           Use for Testing <input type="checkbox"/><br/>           Poor Information <input type="checkbox"/><br/>           Rushing <input type="checkbox"/><br/>           Product Improvement <input type="checkbox"/><br/>           Process Improvement <input type="checkbox"/><br/>           Manufacturing Process <input type="checkbox"/><br/>           Past Due <input type="checkbox"/> </div> </div> |  |  |  | <b>FAULT CATEGORY</b><br><div style="display: flex; justify-content: space-between;"> <div>           Pressure/Forced <input type="checkbox"/><br/>           Bending <input type="checkbox"/><br/>           Centre Not Concentric <input type="checkbox"/><br/>           Cracks <input type="checkbox"/><br/>           Crimp/Kink/Ripple/Wave <input type="checkbox"/><br/>           Cuffs <input type="checkbox"/><br/>           Crushing <input type="checkbox"/><br/>           Heat Treat <input type="checkbox"/><br/>           Wave/Twist in Tube <input type="checkbox"/><br/>           Marks/Chatter <input type="checkbox"/> </div> <div>           Temperature/Cure <input type="checkbox"/><br/>           Set-up <input type="checkbox"/><br/>           BOM/Route <input type="checkbox"/><br/>           Broken/Damage/Defect <input type="checkbox"/><br/>           Inspection Incomplete/Unqualified <input type="checkbox"/><br/>           Contamination <input type="checkbox"/><br/>           Countersink <input type="checkbox"/><br/>           Cut Too Short <input type="checkbox"/><br/>           Instructions Incomplete/Unclear <input type="checkbox"/><br/>           Drill Holes <input type="checkbox"/> </div> <div>           Power Loss/Surge <input type="checkbox"/><br/>           Folio/Program <input type="checkbox"/><br/>           Grain <input type="checkbox"/><br/>           Weld <input type="checkbox"/><br/>           Wrong Stock Pulled <input type="checkbox"/><br/>           Out of Sequence <input type="checkbox"/><br/>           Off-set <input type="checkbox"/><br/>           Mislabeled <input type="checkbox"/><br/>           Fit/Function <input type="checkbox"/><br/>           Misaligned/off center <input type="checkbox"/> </div> <div>           Positioned Wrong <input type="checkbox"/><br/>           Outside Dimensions <input type="checkbox"/><br/>           Over/Under tolerance <input type="checkbox"/><br/>           Part Incorrect <input type="checkbox"/><br/>           Part Lost/Missing <input type="checkbox"/><br/>           Part Moved <input type="checkbox"/><br/>           Drawing <input type="checkbox"/><br/>           Finish <input type="checkbox"/><br/>           Misread <input type="checkbox"/><br/>           Turning Sequence <input type="checkbox"/> </div> </div> |  |  |  |
| OTHER : <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |  |

# Work Order ID 137583

October 07, 2015 10:36:33 AM

**\*137583\***

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Item ID: D117-762-041 Accept **\*N900040100\*** Setup Start **\*NS1\***  
 Revision ID: Stop **\*NS2\***  
 Item Name: Replacement Skidtube  
 Start Date: 10/7/2015 Start Qty: 1.00 **\*1\*** Cust Item ID:  
 Required Date: 10/21/2015 Req'd Qty: 1.00 **\*1\*** Customer:  
 Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description                                                                                                                 | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp                   |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------------------------|
| 140                            | Skidtubes                                                                                                                                | 0.00                 |         |        |              |               |               |                  |                                  |
| <b>*140*</b>                   |                                                                                                                                          |                      |         |        |              |               |               |                  |                                  |
| Skidtubes                      | Memo                                                                                                                                     | 0.01                 |         |        |              |               |               |                  |                                  |
| Skidtubes                      | 1-Weld fwd cap D2964 per dwg D3582 and QSI 004<br>A/R AL ROD Batch: <u>M132562</u> / <u>M132917</u> <b>7 BE15-10-14</b><br>2-Grind flush |                      |         |        |              |               |               |                  |                                  |
| 150                            | QC10- Inspect visual per QSI004- ground welds                                                                                            | 0.00                 |         |        |              |               |               |                  |                                  |
| <b>*150*</b>                   |                                                                                                                                          |                      |         |        |              |               |               |                  |                                  |
| QC                             | Memo                                                                                                                                     | 0.00                 |         |        |              |               |               |                  |                                  |
| Quality Control                |                                                                                                                                          |                      |         |        |              |               |               |                  | DAS<br>38<br>OCT 14 2015         |
| 160                            | QC5- Inspect part completeness to step on W/O                                                                                            | 0.00                 |         |        |              |               |               |                  |                                  |
| <b>*160*</b>                   |                                                                                                                                          |                      |         |        |              |               |               |                  |                                  |
| QC                             | Memo                                                                                                                                     | 0.00                 |         |        |              |               |               |                  |                                  |
| Quality Control                |                                                                                                                                          |                      |         |        |              |               |               |                  | DAS<br>38<br>9-89<br>OCT 14 2015 |

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

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| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div>                                                                                                                                                                                                                                                                |  |  |                                                                                                                                                     |  |  |
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| <b>Root Cause</b><br><div style="display: flex;"> <div style="width: 50%;">           Environment <input type="checkbox"/><br/>           Design <input type="checkbox"/><br/>           Doc/Data <input type="checkbox"/><br/>           Equip/Tooling <input type="checkbox"/><br/>           Handling/Pre <input type="checkbox"/><br/>           Material <input type="checkbox"/><br/>           Internal Transport <input type="checkbox"/><br/>           Tribal Knowledge <input type="checkbox"/><br/>           LOA <input type="checkbox"/><br/>           Substation <input type="checkbox"/><br/>           Past Expiry Date <input type="checkbox"/><br/>           Misidentified <input type="checkbox"/> </div> <div style="width: 50%;">           No Re-verification <input type="checkbox"/><br/>           Operator <input type="checkbox"/><br/>           Offset/Setup <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Training <input type="checkbox"/><br/>           Use for Testing <input type="checkbox"/><br/>           Poor Information <input type="checkbox"/><br/>           Rushing <input type="checkbox"/><br/>           Product Improvement <input type="checkbox"/><br/>           Process Improvement <input type="checkbox"/><br/>           Manufacturing Process <input type="checkbox"/><br/>           Past Due <input type="checkbox"/> </div> </div> |  | <b>FAULT CATEGORY</b><br><div style="display: flex;"> <div style="width: 50%;">           Pressure/Forced <input type="checkbox"/><br/>           Bending <input type="checkbox"/><br/>           Centre Not Concentric <input type="checkbox"/><br/>           Cracks <input type="checkbox"/><br/>           Crimp/Kink/Ripple/Wave <input type="checkbox"/><br/>           Cuffs <input type="checkbox"/><br/>           Crushing <input type="checkbox"/><br/>           Heat Treat <input type="checkbox"/><br/>           Wave/Twist in Tube <input type="checkbox"/><br/>           Marks/Chatter <input type="checkbox"/> </div> <div style="width: 50%;">           Temperature/Cure <input type="checkbox"/><br/>           Set-up <input type="checkbox"/><br/>           BOM/Route <input type="checkbox"/><br/>           Broken/Damage/Defect <input type="checkbox"/><br/>           Inspection Incomplete/Unqualified <input type="checkbox"/><br/>           Contamination <input type="checkbox"/><br/>           Countersink <input type="checkbox"/><br/>           Cut Too Short <input type="checkbox"/><br/>           Instructions Incomplete/Unclear <input type="checkbox"/><br/>           Drill Holes <input type="checkbox"/> </div> </div> |  | <div style="display: flex;"> <div style="width: 50%;">           Power Loss/Surge <input type="checkbox"/><br/>           Folio/Program <input type="checkbox"/><br/>           Grain <input type="checkbox"/><br/>           Weld <input type="checkbox"/><br/>           Wrong Stock Pulled <input type="checkbox"/><br/>           Out of Sequence <input type="checkbox"/><br/>           Off-set <input type="checkbox"/><br/>           Mislabeled <input type="checkbox"/><br/>           Fit/Function <input type="checkbox"/><br/>           Misaligned/off center <input type="checkbox"/> </div> <div style="width: 50%;">           Positioned Wrong <input type="checkbox"/><br/>           Outside Dimensions <input type="checkbox"/><br/>           Over/Under tolerance <input type="checkbox"/><br/>           Part Incorrect <input type="checkbox"/><br/>           Part Lost/Missing <input type="checkbox"/><br/>           Part Moved <input type="checkbox"/><br/>           Drawing <input type="checkbox"/><br/>           Finish <input type="checkbox"/><br/>           Misread <input type="checkbox"/><br/>           Turning Sequence <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| OTHER : <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |  |  |                                                                                                                                                     |  |  |

**Work Order ID 137583**

October 07, 2015 10:36:33 AM

**\*137583\***

Page

Item ID: D117-762-041

Accept

**\*N900040100\***

Setup Start

**\*NS1\***

Revision ID:

Stop

**\*NS2\***

Item Name: Replacement Skidtube

Start Date: 10/7/2015 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 10/21/2015 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

**\*NR1\***

QC:

Date:

SPC (Y/N):

Date:

Stop

**\*NR2\***Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

170

Chemical Conversion Coat per QSI005 4.1

0.00

**\*170\***

HandFinish

Memo

0.01

Hand Finishing

180

QC7-Inspect Chemical Conversion Coat

0.00

**\*180\***

QC

Memo

0.00

Quality Control

DD 15-10-15

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
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| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                      |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Date :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | Step #:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| Description Work Order Deviation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
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| <b>Root Cause</b><br>Environment <input type="checkbox"/><br>Design <input type="checkbox"/><br>Doc/Data <input type="checkbox"/><br>Equip/Tooling <input type="checkbox"/><br>Handling/Pre <input type="checkbox"/><br>Material <input type="checkbox"/><br>Internal Transport <input type="checkbox"/><br>Tribal Knowledge <input type="checkbox"/><br>LOA <input type="checkbox"/><br>Substation <input type="checkbox"/><br>Past Expiry Date <input type="checkbox"/><br>Misidentified <input type="checkbox"/> |  | No Re-verification <input type="checkbox"/><br>Operator <input type="checkbox"/><br>Offset/Setup <input type="checkbox"/><br>Supplier <input type="checkbox"/><br>Training <input type="checkbox"/><br>Use for Testing <input type="checkbox"/><br>Poor Information <input type="checkbox"/><br>Rushing <input type="checkbox"/><br>Product Improvement <input type="checkbox"/><br>Process Improvement <input type="checkbox"/><br>Manufacturing Process <input type="checkbox"/><br>Past Due <input type="checkbox"/> |  | <b>FAULT CATEGORY</b><br>Pressure/Forced <input type="checkbox"/><br>Bending <input type="checkbox"/><br>Centre Not Concentric <input type="checkbox"/><br>Cracks <input type="checkbox"/><br>Crimp/Kink/Ripple/Wave <input type="checkbox"/><br>Cuffs <input type="checkbox"/><br>Crushing <input type="checkbox"/><br>Heat Treat <input type="checkbox"/><br>Wave/Twist in Tube <input type="checkbox"/><br>Marks/Chatter <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | Temperature/Cure <input type="checkbox"/><br>Set-up <input type="checkbox"/><br>BOM/Route <input type="checkbox"/><br>Broken/Damage/Defect <input type="checkbox"/><br>Inspection Incomplete/Unqualified <input type="checkbox"/><br>Contamination <input type="checkbox"/><br>Countersink <input type="checkbox"/><br>Cut Too Short <input type="checkbox"/><br>Instructions Incomplete/Unclear <input type="checkbox"/><br>Drill Holes <input type="checkbox"/> |                                                                                                                                                     | Power Loss/Surge <input type="checkbox"/><br>Folio/Program <input type="checkbox"/><br>Grain <input type="checkbox"/><br>Weld <input type="checkbox"/><br>Wrong Stock Pulled <input type="checkbox"/><br>Out of Sequence <input type="checkbox"/><br>Off-set <input type="checkbox"/><br>Mislabeled <input type="checkbox"/><br>Fit/Function <input type="checkbox"/><br>Misaligned/off center <input type="checkbox"/> |  | Positioned Wrong <input type="checkbox"/><br>Outside Dimensions <input type="checkbox"/><br>Over/Under tolerance <input type="checkbox"/><br>Part Incorrect <input type="checkbox"/><br>Part Lost/Missing <input type="checkbox"/><br>Part Moved <input type="checkbox"/><br>Drawing <input type="checkbox"/><br>Finish <input type="checkbox"/><br>Misread <input type="checkbox"/><br>Turning Sequence <input type="checkbox"/> |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |  | OTHER : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |



**Work Order ID 137583****\*137583\***

Page 5

Item ID: D117-762-041

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Replacement Skidtube

Start Date: 10/7/2015 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 10/21/2015 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
|--------------------------------|--------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|

190

0.00

**\*190\***

Skidtubes

0.02

Skidtubes

Memo

1-Open X-Bolt holes to finish size as per Dwg D3582, all sections

2-Counter Sink X-BOLT holes as per Dwg D3582

3-Deburr and blow out chips from inside of tube, prep. tube for welding

4-Bond web as per Dwg D3582 &amp; QSI 015

A/R 241 Sike Flex Batch: 133/36  
Exp Date: 10-2-12

5-Weld x-bolt spacers(D2973) as per Dwg D3582 section B-B.

A/R AL ROD Batch: MBK562

6-Grind welds flush

0.00

200

QC10- Inspect visual per QSI004- ground welds

**\*200\***

QC

Memo

0.00

Quality Control

DAS  
38  
9-89

OCT 20 2015

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                            |  |  |
|--------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                            |  |  |
| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | <b>MRB (QSI042) Approval</b><br><br>Completed By _____<br><br>Lead hand / Supervisor Approval Verification _____<br><br>QC / QA Coordinator Approval _____ |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                            |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                            |  |  |

| Root Cause                            |                                     |                                             |                                           | FAULT CATEGORY                                  |                                                            |                                                |                                               |
|---------------------------------------|-------------------------------------|---------------------------------------------|-------------------------------------------|-------------------------------------------------|------------------------------------------------------------|------------------------------------------------|-----------------------------------------------|
| Environment <input type="checkbox"/>  | Design <input type="checkbox"/>     | Doc/Data <input type="checkbox"/>           | Equip/Tooling <input type="checkbox"/>    | Pressure/Forced <input type="checkbox"/>        | Temperature/Cure <input type="checkbox"/>                  | Power Loss/Surge <input type="checkbox"/>      | Positioned Wrong <input type="checkbox"/>     |
| Handling/Pre <input type="checkbox"/> | Material <input type="checkbox"/>   | Internal Transport <input type="checkbox"/> | Tribal Knowledge <input type="checkbox"/> | Bending <input type="checkbox"/>                | Set-up <input type="checkbox"/>                            | Folio/Program <input type="checkbox"/>         | Outside Dimensions <input type="checkbox"/>   |
| LOA <input type="checkbox"/>          | Substation <input type="checkbox"/> | Past Expiry Date <input type="checkbox"/>   | Misidentified <input type="checkbox"/>    | Centre Not Concentric <input type="checkbox"/>  | BOM/Route <input type="checkbox"/>                         | Grain <input type="checkbox"/>                 | Over/Under tolerance <input type="checkbox"/> |
|                                       |                                     |                                             |                                           | Cracks <input type="checkbox"/>                 | Broken/Damage/Defect <input type="checkbox"/>              | Weld <input type="checkbox"/>                  | Part Incorrect <input type="checkbox"/>       |
|                                       |                                     |                                             |                                           | Crimp/Kink/Ripple/Wave <input type="checkbox"/> | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/>    | Part Lost/Missing <input type="checkbox"/>    |
|                                       |                                     |                                             |                                           | Cuffs <input type="checkbox"/>                  | Contamination <input type="checkbox"/>                     | Out of Sequence <input type="checkbox"/>       | Part Moved <input type="checkbox"/>           |
|                                       |                                     |                                             |                                           | Crushing <input type="checkbox"/>               | Countersink <input type="checkbox"/>                       | Off-set <input type="checkbox"/>               | Drawing <input type="checkbox"/>              |
|                                       |                                     |                                             |                                           | Heat Treat <input type="checkbox"/>             | Cut Too Short <input type="checkbox"/>                     | Mislabeled <input type="checkbox"/>            | Finish <input type="checkbox"/>               |
|                                       |                                     |                                             |                                           | Wave/Twist in Tube <input type="checkbox"/>     | Instructions Incomplete/Unclear <input type="checkbox"/>   | Fit/Function <input type="checkbox"/>          | Misread <input type="checkbox"/>              |
|                                       |                                     |                                             |                                           | Marks/Chatter <input type="checkbox"/>          | Drill Holes <input type="checkbox"/>                       | Misaligned/off center <input type="checkbox"/> | Turning Sequence <input type="checkbox"/>     |
|                                       |                                     |                                             |                                           | OTHER : _____                                   |                                                            |                                                |                                               |



DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
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| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| <b>Root Cause</b><br><div style="display: flex; justify-content: space-between;"> <div>           Environment <input type="checkbox"/><br/>           Design <input type="checkbox"/><br/>           Doc/Data <input type="checkbox"/><br/>           Equip/Tooling <input type="checkbox"/><br/>           Handling/Pre <input type="checkbox"/><br/>           Material <input type="checkbox"/><br/>           Internal Transport <input type="checkbox"/><br/>           Tribal Knowledge <input type="checkbox"/><br/>           LOA <input type="checkbox"/><br/>           Substation <input type="checkbox"/><br/>           Past Expiry Date <input type="checkbox"/><br/>           Misidentified <input type="checkbox"/> </div> <div>           No Re-verification <input type="checkbox"/><br/>           Operator <input type="checkbox"/><br/>           Offset/Setup <input type="checkbox"/><br/>           Supplier <input type="checkbox"/><br/>           Training <input type="checkbox"/><br/>           Use for Testing <input type="checkbox"/><br/>           Poor Information <input type="checkbox"/><br/>           Rushing <input type="checkbox"/><br/>           Product Improvement <input type="checkbox"/><br/>           Process Improvement <input type="checkbox"/><br/>           Manufacturing Process <input type="checkbox"/><br/>           Past Due <input type="checkbox"/> </div> </div> |  |  |  | <b>FAULT CATEGORY</b><br><div style="display: flex; justify-content: space-between;"> <div>           Pressure/Forced <input type="checkbox"/><br/>           Bending <input type="checkbox"/><br/>           Centre Not Concentric <input type="checkbox"/><br/>           Cracks <input type="checkbox"/><br/>           Crimp/Kink/Ripple/Wave <input type="checkbox"/><br/>           Cuffs <input type="checkbox"/><br/>           Crushing <input type="checkbox"/><br/>           Heat Treat <input type="checkbox"/><br/>           Wave/Twist in Tube <input type="checkbox"/><br/>           Marks/Chatter <input type="checkbox"/> </div> <div>           Temperature/Cure <input type="checkbox"/><br/>           Set-up <input type="checkbox"/><br/>           BOM/Route <input type="checkbox"/><br/>           Broken/Damage/Defect <input type="checkbox"/><br/>           Inspection Incomplete/Unqualified <input type="checkbox"/><br/>           Contamination <input type="checkbox"/><br/>           Countersink <input type="checkbox"/><br/>           Cut Too Short <input type="checkbox"/><br/>           Instructions Incomplete/Unclear <input type="checkbox"/><br/>           Drill Holes <input type="checkbox"/> </div> <div>           Power Loss/Surge <input type="checkbox"/><br/>           Folio/Program <input type="checkbox"/><br/>           Grain <input type="checkbox"/><br/>           Weld <input type="checkbox"/><br/>           Wrong Stock Pulled <input type="checkbox"/><br/>           Out of Sequence <input type="checkbox"/><br/>           Off-set <input type="checkbox"/><br/>           Misabeled <input type="checkbox"/><br/>           Fit/Function <input type="checkbox"/><br/>           Misaligned/off center <input type="checkbox"/> </div> <div>           Positioned Wrong <input type="checkbox"/><br/>           Outside Dimensions <input type="checkbox"/><br/>           Over/Under tolerance <input type="checkbox"/><br/>           Part Incorrect <input type="checkbox"/><br/>           Part Lost/Missing <input type="checkbox"/><br/>           Part Moved <input type="checkbox"/><br/>           Drawing <input type="checkbox"/><br/>           Finish <input type="checkbox"/><br/>           Misread <input type="checkbox"/><br/>           Turning Sequence <input type="checkbox"/> </div> </div> |  |  |  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |  |  | OTHER : _____                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |

# Work Order ID 137583

October 07, 2015 10:36:33 AM

**\*137583\***

Page 7

Item ID: D117-762-041 Accept **\*N900040100\*** Setup Start **\*NS1\***  
 Revision ID: Stop **\*NS2\***  
 Item Name: Replacement Skidtube  
 Start Date: 10/7/2015 Start Qty: 1.00 **\*1\*** Cust Item ID:  
 Required Date: 10/21/2015 Req'd Qty: 1.00 **\*1\*** Customer:  
 Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description                                                                         | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp |
|--------------------------------|--------------------------------------------------------------------------------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|----------------|
| 230                            | QC3- Inspect Part Finish                                                                         | 0.00                 |         |        |              |               |               |                  |                |
| <b>*230*</b>                   |                                                                                                  |                      |         |        |              |               |               |                  |                |
| QC                             | Memo                                                                                             | 0.00                 |         |        |              |               |               |                  |                |
| Quality Control                |                                                                                                  |                      |         |        |              |               |               |                  |                |
| 250                            |                                                                                                  | 0.00                 |         |        |              |               |               |                  |                |
| <b>*250*</b>                   | HandFinishing                                                                                    |                      |         |        |              |               |               |                  |                |
| HandFinish                     | Memo                                                                                             | 0.03                 |         |        |              |               |               |                  |                |
| Hand Finishing                 | 1-Inspect for Foreign objects                                                                    |                      |         |        |              |               |               |                  |                |
|                                | 2-Install Aft cap as per Dwg D3582, Detail "C"                                                   |                      |         |        |              |               |               |                  |                |
|                                | A/R 241 Sika Flex Batch: <u>M1133136</u>                                                         |                      |         |        |              |               |               |                  |                |
|                                | Exp Date: <u>16/12</u>                                                                           |                      |         |        |              |               |               |                  |                |
|                                | 3-Install Wearplates as per Dwg D3582,                                                           |                      |         |        |              |               |               |                  |                |
|                                | Note: Install Bolt and washer on Ground Wire inserts on top of tube see section D-D of dwg D3582 |                      |         |        |              |               |               |                  |                |
|                                | ***** Do not install bolts where indicated on Dwg (Note #6) *****                                |                      |         |        |              |               |               |                  |                |
|                                | A/R 241 Sika Flex Batch: <u>M1133136</u>                                                         |                      |         |        |              |               |               |                  |                |
|                                | Exp Date: <u>16/12</u>                                                                           |                      |         |        |              |               |               |                  |                |
|                                | 4-assemble o'ring as per dwg D3492 and apply o'ring lube                                         |                      |         |        |              |               |               |                  |                |
|                                | A/R 55-o'ring lube batch: <u>M1133136</u>                                                        |                      |         |        |              |               |               |                  |                |
|                                | 5- Wing Walk as per Dwg D3582 and QSI 005 4.4                                                    |                      |         |        |              |               |               |                  |                |

DAS  
15  
9-89

890 RTU M133275 17105  
M113305C

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
|--------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |  | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |  | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |  |  |                                                                                                                                                     |  |  |
| Date :                                                       |  | Step #:                                                                                                                                                                            |  | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |  |                                                                                                                                                                                    |  | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |
|                                                              |  |                                                                                                                                                                                    |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |  |                                                                                                                                                     |  |  |

| Root Cause         |                          |                       |                          | FAULT CATEGORY         |                          |                                   |                          |
|--------------------|--------------------------|-----------------------|--------------------------|------------------------|--------------------------|-----------------------------------|--------------------------|
| Environment        | <input type="checkbox"/> | No Re-verification    | <input type="checkbox"/> | Pressure/Forced        | <input type="checkbox"/> | Temperature/Cure                  | <input type="checkbox"/> |
| Design             | <input type="checkbox"/> | Operator              | <input type="checkbox"/> | Bending                | <input type="checkbox"/> | Set-up                            | <input type="checkbox"/> |
| Doc/Data           | <input type="checkbox"/> | Offset/Setup          | <input type="checkbox"/> | Centre Not Concentric  | <input type="checkbox"/> | BOM/Route                         | <input type="checkbox"/> |
| Equip/Tooling      | <input type="checkbox"/> | Supplier              | <input type="checkbox"/> | Cracks                 | <input type="checkbox"/> | Broken/Damage/Defect              | <input type="checkbox"/> |
| Handling/Pre       | <input type="checkbox"/> | Training              | <input type="checkbox"/> | Crimp/Kink/Ripple/Wave | <input type="checkbox"/> | Inspection Incomplete/Unqualified | <input type="checkbox"/> |
| Material           | <input type="checkbox"/> | Use for Testing       | <input type="checkbox"/> | Cuffs                  | <input type="checkbox"/> | Contamination                     | <input type="checkbox"/> |
| Internal Transport | <input type="checkbox"/> | Poor Information      | <input type="checkbox"/> | Crushing               | <input type="checkbox"/> | Countersink                       | <input type="checkbox"/> |
| Tribal Knowledge   | <input type="checkbox"/> | Rushing               | <input type="checkbox"/> | Heat Treat             | <input type="checkbox"/> | Cut Too Short                     | <input type="checkbox"/> |
| LOA                | <input type="checkbox"/> | Product Improvement   | <input type="checkbox"/> | Wave/Twist in Tube     | <input type="checkbox"/> | Instructions Incomplete/Unclear   | <input type="checkbox"/> |
| Substation         | <input type="checkbox"/> | Process Improvement   | <input type="checkbox"/> | Marks/Chatter          | <input type="checkbox"/> | Drill Holes                       | <input type="checkbox"/> |
| Past Expiry Date   | <input type="checkbox"/> | Manufacturing Process | <input type="checkbox"/> | OTHER :                |                          |                                   |                          |
| Misidentified      | <input type="checkbox"/> | Past Due              | <input type="checkbox"/> |                        |                          |                                   |                          |

**Work Order ID 137583**

October 07, 2015 10:36:33 AM

**\*137583\***

Page 8

Item ID: D117-762-041

Accept

**\*N900040100\***Setup Start **\*NS1\***

Revision ID:

Stop **\*NS2\***

Item Name: Replacement Skidtube

Start Date: 10/7/2015 Start Qty: 1.00

**\*1\***

Cust Item ID:

Required Date: 10/21/2015 Req'd Qty: 1.00

**\*1\***

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Run Start **\*NR1\***

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop **\*NR2\***

| Sequence ID/<br>Work Center ID | Operation<br>Description                                                  | Set Up/<br>Run Hours | Tool ID | Tool # | Plan<br>Code | Accept<br>Qty | Reject<br>Qty | Reject<br>Number | Insp.<br>Stamp    |
|--------------------------------|---------------------------------------------------------------------------|----------------------|---------|--------|--------------|---------------|---------------|------------------|-------------------|
| 260                            | QC5- Inspect part completeness to step on W/O                             | 0.00                 |         |        |              |               |               |                  | DAS<br>38<br>9-89 |
| <b>*260*</b>                   |                                                                           |                      |         |        |              |               |               |                  |                   |
| QC                             | Memo                                                                      | 0.00                 |         |        |              |               |               |                  | OCT 23 2015       |
| Quality Control                |                                                                           |                      |         |        |              |               |               |                  |                   |
| 270                            |                                                                           | 0.00                 |         |        |              |               |               |                  |                   |
| <b>*270*</b>                   | Packaging                                                                 |                      |         |        |              |               |               |                  |                   |
| Packaging                      | Memo                                                                      | 0.00                 |         |        |              |               |               |                  |                   |
| Packaging                      | Identify and pack for shipping as per PPP D117-762-041<br>Location :FG081 |                      |         |        |              |               |               |                  |                   |
|                                |                                                                           |                      |         |        |              |               |               |                  |                   |
| 280                            | QC21- Final Inspection - Work Order Release                               | 0.00                 |         |        |              |               |               |                  |                   |
| <b>*280*</b>                   |                                                                           |                      |         |        |              |               |               |                  |                   |
| QC                             | Memo                                                                      | 0.00                 |         |        |              |               |               |                  |                   |
| Quality Control                |                                                                           |                      |         |        |              |               |               |                  |                   |

SJA 20151023

DQA: \_\_\_\_\_ Date: \_\_\_\_\_



## WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order update only ☐

|                                                              |                                                |                                                                                                                                                                                    |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                                                                                                                                                     |  |  |
|--------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Work Order: _____<br><br>Part No. _____<br><br>NCR No. _____ |                                                | <b>DISPOSITION</b><br><br>Rework <input type="checkbox"/><br>Scrap <input type="checkbox"/><br>Use-as-is <input type="checkbox"/><br>Suspected Unapproved <input type="checkbox"/> |                                                            | <b>AGAINST DEPARTMENT/PROCESS</b><br><br><div style="display: flex; justify-content: space-between;"> <div>           Skid-tube <input type="checkbox"/><br/>           Machining <input type="checkbox"/><br/>           Thermoforming <input type="checkbox"/><br/>           Large Fab <input type="checkbox"/> </div> <div>           Cross tube <input type="checkbox"/><br/>           Small Fab <input type="checkbox"/><br/>           Finishing <input type="checkbox"/><br/>           Composite <input type="checkbox"/> </div> <div>           Water Jet <input type="checkbox"/><br/>           Prod. Eng. Coord. <input type="checkbox"/><br/>           Rec/Store/Packaging <input type="checkbox"/><br/>           Supplier <input type="checkbox"/> </div> <div>           Engineering <input type="checkbox"/><br/>           Quality <input type="checkbox"/><br/>           Other <input type="checkbox"/> </div> </div> |                                               |  |                                                                                                                                                     |  |  |
| Date :                                                       |                                                | Step #:                                                                                                                                                                            |                                                            | QTY Effective :                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  | MRB (QSI042) Approval<br><br><br>Completed By<br><br><br>Lead hand / Supervisor<br>Approval Verification<br><br><br>QC / QA Coordinator<br>Approval |  |  |
| Description Work Order Deviation                             |                                                |                                                                                                                                                                                    |                                                            | Disposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                               |  |                                                                                                                                                     |  |  |
|                                                              |                                                |                                                                                                                                                                                    |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                                                                                                                                                     |  |  |
|                                                              |                                                |                                                                                                                                                                                    |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                                                                                                                                                     |  |  |
| Root Cause                                                   |                                                | FAULT CATEGORY                                                                                                                                                                     |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                                                                                                                                                     |  |  |
| Environment <input type="checkbox"/>                         | No Re-verification <input type="checkbox"/>    | Pressure/Forced <input type="checkbox"/>                                                                                                                                           | Temperature/Cure <input type="checkbox"/>                  | Power Loss/Surge <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Positioned Wrong <input type="checkbox"/>     |  |                                                                                                                                                     |  |  |
| Design <input type="checkbox"/>                              | Operator <input type="checkbox"/>              | Bending <input type="checkbox"/>                                                                                                                                                   | Set-up <input type="checkbox"/>                            | Folio/Program <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Outside Dimensions <input type="checkbox"/>   |  |                                                                                                                                                     |  |  |
| Doc/Data <input type="checkbox"/>                            | Offset/Setup <input type="checkbox"/>          | Centre Not Concentric <input type="checkbox"/>                                                                                                                                     | BOM/Route <input type="checkbox"/>                         | Grain <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Over/Under tolerance <input type="checkbox"/> |  |                                                                                                                                                     |  |  |
| Equip/Tooling <input type="checkbox"/>                       | Supplier <input type="checkbox"/>              | Cracks <input type="checkbox"/>                                                                                                                                                    | Broken/Damage/Defect <input type="checkbox"/>              | Weld <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Part Incorrect <input type="checkbox"/>       |  |                                                                                                                                                     |  |  |
| Handling/Pre <input type="checkbox"/>                        | Training <input type="checkbox"/>              | Crimp/Kink/Ripple/Wave <input type="checkbox"/>                                                                                                                                    | Inspection Incomplete/Unqualified <input type="checkbox"/> | Wrong Stock Pulled <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Part Lost/Missing <input type="checkbox"/>    |  |                                                                                                                                                     |  |  |
| Material <input type="checkbox"/>                            | Use for Testing <input type="checkbox"/>       | Cuffs <input type="checkbox"/>                                                                                                                                                     | Contamination <input type="checkbox"/>                     | Out of Sequence <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Part Moved <input type="checkbox"/>           |  |                                                                                                                                                     |  |  |
| Internal Transport <input type="checkbox"/>                  | Poor Information <input type="checkbox"/>      | Crushing <input type="checkbox"/>                                                                                                                                                  | Countersink <input type="checkbox"/>                       | Off-set <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Drawing <input type="checkbox"/>              |  |                                                                                                                                                     |  |  |
| Tribal Knowledge <input type="checkbox"/>                    | Rushing <input type="checkbox"/>               | Heat Treat <input type="checkbox"/>                                                                                                                                                | Cut Too Short <input type="checkbox"/>                     | Mislabeled <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Finish <input type="checkbox"/>               |  |                                                                                                                                                     |  |  |
| LOA <input type="checkbox"/>                                 | Product Improvement <input type="checkbox"/>   | Wave/Twist in Tube <input type="checkbox"/>                                                                                                                                        | Instructions Incomplete/Unclear <input type="checkbox"/>   | Fit/Function <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Misread <input type="checkbox"/>              |  |                                                                                                                                                     |  |  |
| Substation <input type="checkbox"/>                          | Process Improvement <input type="checkbox"/>   | Marks/Chatter <input type="checkbox"/>                                                                                                                                             | Drill Holes <input type="checkbox"/>                       | Misaligned/off center <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Turning Sequence <input type="checkbox"/>     |  |                                                                                                                                                     |  |  |
| Past Expiry Date <input type="checkbox"/>                    | Manufacturing Process <input type="checkbox"/> | OTHER :                                                                                                                                                                            |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                                                                                                                                                     |  |  |
| Misidentified <input type="checkbox"/>                       | Past Due <input type="checkbox"/>              |                                                                                                                                                                                    |                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                               |  |                                                                                                                                                     |  |  |



October 07, 2015 10:36:40 AM

**\*137583\***

**\*D117-762-041\***

**Required Date:** 10/21/2015

**Required Qty: 1.00**

**Comments:** IPP Rev:A07.06.11New Issue EC  
IPP Rev:B 08-02-22 change to revA as per dwg DD verF by:EC IPP REV:C  
15.06.11 AS PER CHG002 DD VERF:JLM

| Component Item ID/<br>Item Name       | Replacement<br>Item ID | Mfg/<br>Purch | Bin<br>Item | Primary<br>Location | Last<br>Location | Route<br>Seq ID | Unit of<br>Measure | Qty on<br>Hand | Qty per Kit | Total<br>Qty    | Qty<br>Issued | Date<br>Issued | Status |
|---------------------------------------|------------------------|---------------|-------------|---------------------|------------------|-----------------|--------------------|----------------|-------------|-----------------|---------------|----------------|--------|
| D3492-11<br><b>*D3492-11*</b><br>Plug |                        | Manufactured  | No          |                     |                  | 250             | Each               | 47.0000        | 2           | 2               |               |                |        |
|                                       |                        |               |             | <u>Location</u>     |                  |                 |                    | <u>Loc Qty</u> |             | <u>Loc Code</u> |               |                |        |
|                                       |                        |               |             | FP001               |                  |                 |                    | 47             |             |                 |               |                |        |
|                                       |                        |               |             |                     | 102294           |                 |                    | 31             |             |                 |               |                |        |
|                                       |                        |               |             |                     | <u>111842</u>    |                 |                    | 16             |             |                 |               |                |        |
| D3492-13<br><b>*D3492-13*</b><br>Plug |                        | Manufactured  | No          |                     |                  | 250             | Each               | 57.0000        | 6           | 6               |               |                |        |
|                                       |                        |               |             | <u>Location</u>     |                  |                 |                    | <u>Loc Qty</u> |             | <u>Loc Code</u> |               |                |        |
|                                       |                        |               |             | FP001               |                  |                 |                    | 57             |             |                 |               |                |        |
|                                       |                        |               |             |                     | 105614           |                 |                    | 27             |             |                 |               |                |        |
|                                       |                        |               |             |                     | <u>109801</u>    |                 |                    | 30             |             |                 |               |                |        |
| D3492-9<br><b>*D3492-9*</b><br>Plug   |                        | Manufactured  | No          |                     |                  | 250             | Each               | 32.0000        | 2           | 2               |               |                |        |
|                                       |                        |               |             | <u>Location</u>     |                  |                 |                    | <u>Loc Qty</u> |             | <u>Loc Code</u> |               |                |        |
|                                       |                        |               |             | FP001               |                  |                 |                    | 32             |             |                 |               |                |        |
|                                       |                        |               |             |                     | 106121           |                 |                    | 17             |             |                 |               |                |        |
|                                       |                        |               |             |                     | <u>111841</u>    |                 |                    | 15             |             |                 |               |                |        |

# Picklist Print

October 07, 2015 10:36:40 AM

Page 2

Work Order ID: 137583

**\*137583\***

Parent Item: D117-762-041

**\*D117-762-041\***

Parent Item Name: Replacement Skidtube

Start Date: 10/7/2015

Required Date: 10/21/2015

Start Qty: 1.00

Required Qty: 1.00

D3582-1-BENT

Manufactured No

130 Each

7.0000

1 1

**\*D3582-1-BENT\***

**\*\***

Skidtube Assembly Bk117

*BBLS-10-07*

Location

Loc Qty

Loc Code

LG002

7

123610

7

D2964

Manufactured No

140 Each

14.0000

1 1

**\*D2964\***

**\*\***

Cap

*BBLS-10-14*

Location

Loc Qty

Loc Code

LG001

14

105541

4

127840

10

D2971

Manufactured No

190 Each

29.0000

1 1

**\*D2971\***

**\*\***

Cross Bolt Spacer

*BBLS-10-19*

Location

Loc Qty

Loc Code

LG001

29

108778

29

D3584-1

Manufactured No

190 Each

1.0000

1 1

**\*D3584-1\***

**\*\***

Web

*① DGL 15-10-15.*

Location

Loc Qty

Loc Code

LG

1

134029

1

# Picklist Print

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Page 3

Work Order ID: 137583

**\*137583\***

Parent Item: D117-762-041

**\*D117-762-041\***

Parent Item Name: Replacement Skidtube

Start Date: 10/7/2015

Required Date: 10/21/2015

Start Qty: 1.00

Required Qty: 1.00

D2973 Manufactured No

190 Each 43.0000 2 2

**\*D2973\***

Cross Bolt Spacer

**\*\***

*BE 13-10-19*

Location

Loc Qty

Loc Code

LG001

43

*(123939)*

43

*2*

D3662-3 Manufactured No

190 Each 95.0000 1 1

**\*D3662-3\***

Crossbolt Spacer

**\*\***

*BE 13-10-19*

Location

Loc Qty

Loc Code

LG001

95

*105725*

30

*(71026)*

18

*81606*

47

*1*

D3662-1 Manufactured No

190 Each 12.0000 3 3

**\*D3662-1\***

Crossbolt Spacer

**\*\***

*BE 13-10-19*

Location

Loc Qty

Loc Code

LG001

12

*(114883)*

12

*3*

ALS4-1032-130 AELS4-1032-130 Purchased No

Each 4,232.000 36

**\*AI S4-1032-130\***

Rivnut

**\*\***

*11/13/12*

Location

Loc Qty

Loc Code

CCK004

4232

*M133077*

4232

*X36*

# Picklist Print

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Page 4

Work Order ID: 137583

**\*137583\***

Parent Item: D117-762-041

**\*D117-762-041\***

Parent Item Name: Replacement Skidtube

Start Date: 10/7/2015

Required Date: 10/21/2015

Start Qty: 1.00

Required Qty: 1.00

ALS4-428-165

Purchased

No

Each

85.0000

2

**\*AI S4-428-165\***

INSERT

**\*\***

*ll 15/10/20*

Location

Loc Qty

Loc Code

FG

10

117769

10

FP001

75

117769

75

*82*

D2965

Manufactured

No

250

Each

89.0000

1

1

**\*D2965\***

Cap

**\*\***

*ll 15/10/20*

Location

Loc Qty

Loc Code

FP001

89

127852

89

*✓*

D3508-3

Manufactured

No

250

Each

4.0000

1

1

**\*D3508-3\***

Wearplate Fwd Center

**\*\***

*ll 15/10/20*

Location

Loc Qty

Loc Code

FP002

4

123188

4

*81*

D3508-9

Manufactured

No

250

Each

4.0000

1

1

**\*D3508-9\***

Wearplate Fwd

**\*\***

*ll 15/10/20*

Location

Loc Qty

Loc Code

FP002

4

123189

4

*✓*

# Picklist Print

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Page 5

Work Order ID: 137583

Parent Item: D117-762-041

Parent Item Name: Replacement Skidtube

**\*137583\***

**\*D117-762-041\***

Start Date: 10/7/2015

Required Date: 10/21/2015

Start Qty: 1.00

Required Qty: 1.00

D3558-3

Manufactured No

250 Each

13.0000

1

1

**\*D3558-3\***

Gasket Center Fwd

**\*\***

*all 10/10/2015*

Location

Loc Qty

Loc Code

FG

1

89649

1

FP001

12

126710

12

*X1*

D3558-9

Manufactured No

250 Each

7.0000

1

1

**\*D3558-9\***

Gasket Fwd

**\*\***

*all 10/10/2015*

Location

Loc Qty

Loc Code

FG

1

80340

1

FP001

6

126711

6

*X1*

D3558-11

Manufactured No

250 Each

7.0000

1

1

**\*D3558-11\***

Gasket Aft Center

**\*\***

*all 10/10/2015*

Location

Loc Qty

Loc Code

FG

1

80339

1

FP001

6

112523

1

134508

5

*X1*

# Picklist Print

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Page 6

Work Order ID: 137583

**\*137583\***

Parent Item: D117-762-041

**\*D117-762-041\***

Parent Item Name: Replacement Skidtube

Start Date: 10/7/2015

Required Date: 10/21/2015

Start Qty: 1.00

Required Qty: 1.00

D3558-13

Manufactured No

250

Each

10.0000

1

1

**\*D3558-13\***

Gasket Aft

**\*\***

*all 10/10/21*

Location

Loc Qty

Loc Code

FG

1

82380

1

FP001

9

126702

9

*xc*

D3508-11

Manufactured No

250

Each

2.0000

1

1

**\*D3508-11\***

Wearplate Aft Center

**\*\***

*all 10/10/21*

Location

Loc Qty

Loc Code

FP002

2

123190

2

*xc*

D3508-13

Manufactured No

250

Each

1.0000

1

1

**\*D3508-13\***

Wearplate Aft

**\*\***

*all 10/10/22*

Location

Loc Qty

Loc Code

FP001

1

134862

1

*B136 B68*

*xc*

NAS1149D0332J

Purchased No

250

Each

1,746.000

2

2

**\*NAS1149D0332.J\***

Washer

**\*\***

*all 10/10/21*

Location

Loc Qty

Loc Code

CA

14

m129682

14

GA

415

m132677

415

ST269

1317

m130325

900

m132677

417

*x*

October 07, 2015 10:36:40 AM

Shop Packet Print

Page 6

# Picklist Print

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Page 7

Work Order ID: 137583

**\*137583\***

Parent Item: D117-762-041

**\*D117-762-041\***

Parent Item Name: Replacement Skidtube

Start Date: 10/7/2015

Required Date: 10/21/2015

Start Qty: 1.00

Required Qty: 1.00

AN3C4A

Purchased

No

250

Each

476.0000

28

28

**\*AN3C4A\*** 7

**\*\***

*Handwritten signature and date 10/10/2015*

Bolt

Location

Loc Qty

Loc Code

FG

20

122814

20

FP001

111

M132551

61

M132803

50

ST349

152

M133234

152

ST350

193

M132317

193

*Handwritten: 11133440*

*Handwritten: ✓ 28*

*Handwritten: ✓ 8*

AN3C5A

Purchased

No

250

Each

595.0000

2

2

**\*AN3C5A\***

**\*\***

*Handwritten signature and date 10/10/2015*

Bolt

Location

Loc Qty

Loc Code

FG

5

122800

5

FP001

268

M132930

268

ST338a

72

M131803

8

M132640

64

ST350

250

M133234

250

*Handwritten: ✓ 2*

# Picklist Print

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Page 8

Work Order ID: 137583

Parent Item: D117-762-041

Parent Item Name: Replacement Skidtube

**\*137583\***

**\*D117-762-041\***

Start Date: 10/7/2015

Required Date: 10/21/2015

Start Qty: 1.00

Required Qty: 1.00

NAS1149D0416J

Purchased

No

250

Each

4,579.000

2

2

**\*NAS1149D0416.J\***

WASHER

**\*\***

*all 10/10/21*

Location

Loc Qty

Loc Code

GA

347

m131511

347

ST260a

2000

m131511

2000

ST270

2232

m131511

2232

*✓*

NAS1149C0332R

Purchased

No

250

Each

5,758.000

28

28

**\*NAS1149C0332R\***

WASHER

**\*\***

*all 10/10/21*

Location

Loc Qty

Loc Code

FP001

1004

m132930

1004

FP01

1871

m133284

1871

*✓ 28*

GA

441

m133284

441

ST271

2442

m133284

2442

AN4-4A

Purchased

No

250

Each

310.0000

2

2

**\*AN4-4A\***

BOLT

**\*\***

*all 10/10/21*

Location

Loc Qty

Loc Code

FP001

20

m125709

20

ST325A

290

m129390

290

*✓ 2*



# Picklist Print

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Page 9

Work Order ID: 137583

**\*137583\***

Parent Item: D117-762-041

**\*D117-762-041\***

Parent Item Name: Replacement Skidtube

Start Date: 10/7/2015

Required Date: 10/21/2015

Start Qty: 1.00

Required Qty: 1.00

NAS1611-012

Purchased

No

250

Each

139.0000

6

6

**\*NAS1611-012\***

O-RING

**\*\***

*ll 13/10/21*

Location

Loc Qty

Loc Code

FP001

139

M127313

139

X6

NAS1611-015

Purchased

No

250

Each

56.0000

2

2

**\*NAS1611-015\***

O-RING

**\*\***

*ll 15/10/21*

Location

Loc Qty

Loc Code

FP001

56

m126637

6

X2

m131317

50

NAS1611-016

Purchased

No

250

Each

188.0000

2

2

**\*NAS1611-016\***

O-RING

**\*\***

*ll 15/10/21*

Location

Loc Qty

Loc Code

FP001

188

M127313

188

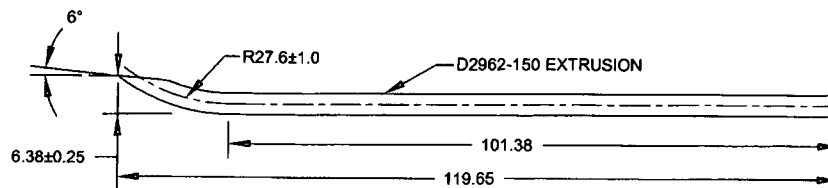
12

# PARTS LIST FOR D3582-041 SKIDTUBE ASSEMBLY

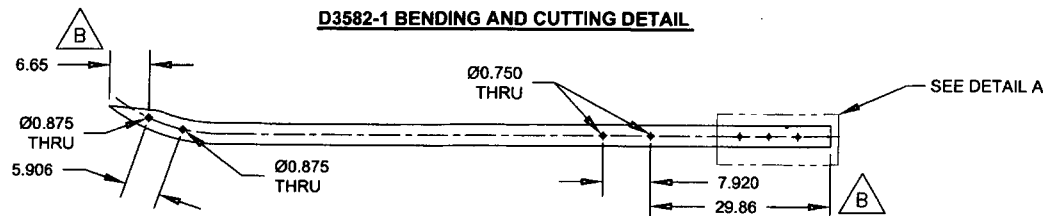
| Qty | Part Number   | Description          |
|-----|---------------|----------------------|
| X   | D3582-041     | SKIDTUBE ASSEMBLY    |
| 1   | D2962-150     | EXTRUSION            |
| 1   | D2964         | CAP                  |
| 1   | D2965         | CAP                  |
| 1   | D2971         | CROSS BOLT SPACER    |
| 2   | D2973         | CROSS BOLT SPACER    |
| 2   | D3492-049     | PLUG ASSEMBLY        |
| 2   | D3492-051     | PLUG ASSEMBLY        |
| 8   | D3492-053     | PLUG ASSEMBLY        |
| 1   | D3508-3       | WEARPLATE            |
| 1   | D3508-9       | WEARPLATE            |
| 1   | D3508-11      | WEARPLATE            |
| 1   | D3508-13      | WEARPLATE            |
| 1   | D3558-3       | GASKET               |
| 1   | D3558-9       | GASKET               |
| 1   | D3558-11      | GASKET               |
| 1   | D3558-13      | GASKET               |
| 1   | D3584-1       | WEB                  |
| 3   | D3662-1 *     | CROSS BOLT SPACER    |
| 1   | D3662-3       | CROSS BOLT SPACER    |
| 36  | AELS-1032-130 | INSERT               |
| 2   | AL57-428-165  | INSERT               |
| 28  | AN3C4A        | BOLT                 |
| 2   | AN3-5A        | BOLT                 |
| 2   | AN4-4A        | BOLT                 |
| 28  | NAS1149C0332R | WASHER (AN880C10L)   |
| 2   | NAS1149D0332J | WASHER (AN880JD10L)  |
| 2   | NAS1149D0416J | WASHER (AN860JD416L) |

## GENERAL NOTES:

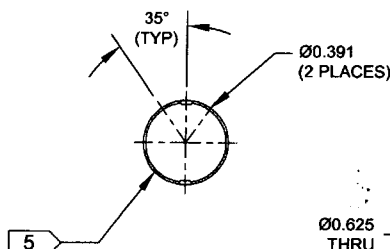
- ALL DIMENSIONS ARE IN INCHES
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- WELDING TO BE DONE PER DART QSI 004.
- INSERT D3584-1 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/-291 ADHESIVE PER DART QSI 015 AFTER BENDING.
- USE DART DRILL TEMPLATE DT8900 TO LOCATE AND DRILL Ø0.297 HOLES (36 PLACES) FOR WEARSHOE INSERTS. INSTALL AELS-1032-130 PER SECTION G-G (36 PLACES) AFTER FINISH. SEAL WEARPLATE BOLTS WITH SIKAFLEX-241/-291.
- DO NOT INSTALL AN3C4A BOLTS AND NAS1149C0332R WASHERS IN INDICATED LOCATIONS.
- FINISH:
  - CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIOR TO INSERTING D3584-1 WEB.
  - POWDER COAT ASSEMBLY GLOSS WHITE (REF 4.3.5.1) PER DART QSI 005 4.3.
  - ANTI-SKID PAINT AS INDICATED TO 1.00 ABOVE CENTER LINE PER DART QSI 005 4.4



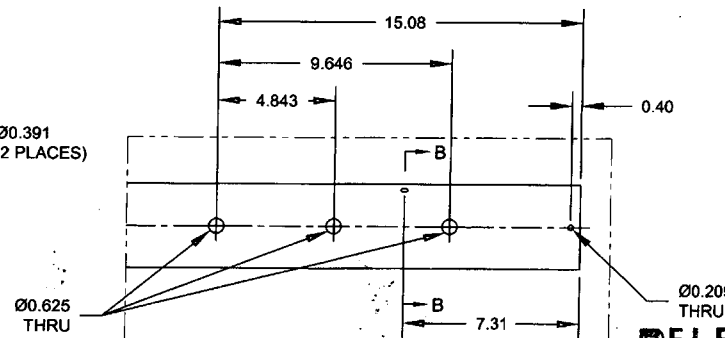
D3582-1 BENDING AND CUTTING DETAIL



D3582-1 DRILLING DETAIL



SECTION B-B  
SCALE 1:5



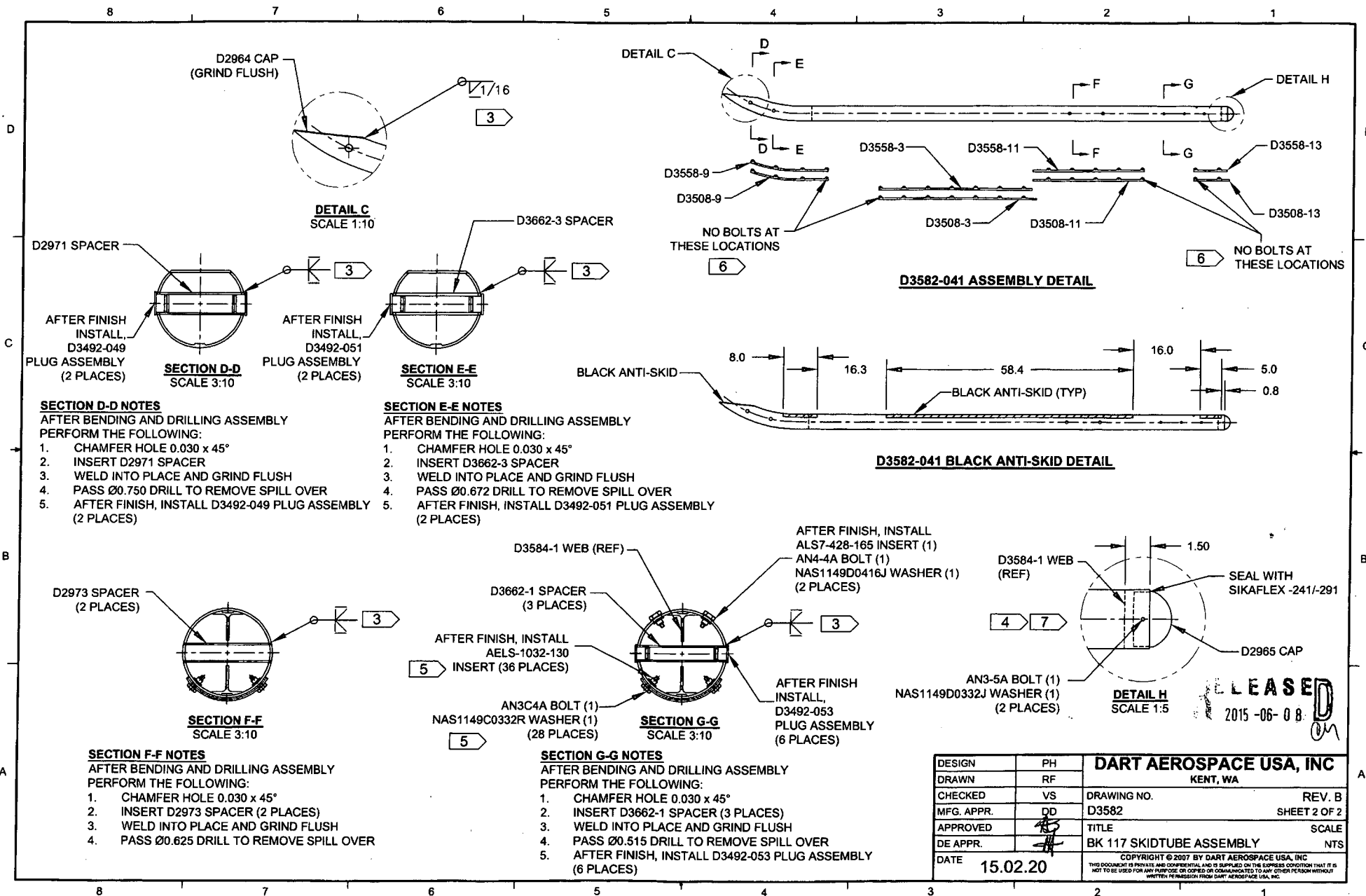
DETAIL A  
SCALE 1:5

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R 2015-06-08  
EEN 15-551 CH

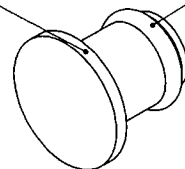
|            |                                                                                                  |                                                                                                                                                                                                                                                                                                      |              |
|------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| B          | 29.86 WAS 28.87 (ZN C2-1)<br>INCORPORATED DEO D3582-A-1 (ZN D5-1)<br>FORMAT TO CURRENT STANDARDS | RF                                                                                                                                                                                                                                                                                                   | 15.02.20     |
| A          | NEW ISSUE                                                                                        | PH                                                                                                                                                                                                                                                                                                   | 07.06.08     |
| REV.       | DESCRIPTION                                                                                      | BY                                                                                                                                                                                                                                                                                                   | DATE         |
| DESIGN     | PH                                                                                               | DART AEROSPACE USA, INC<br>KENT, WA                                                                                                                                                                                                                                                                  |              |
| DRAWN      | RF                                                                                               |                                                                                                                                                                                                                                                                                                      |              |
| CHECKED    | VS                                                                                               | DRAWING NO.                                                                                                                                                                                                                                                                                          | REV. B       |
| MFG. APPR. | DP                                                                                               | D3582                                                                                                                                                                                                                                                                                                | SHEET 1 OF 2 |
| APPROVED   | CH                                                                                               | TITLE                                                                                                                                                                                                                                                                                                | SCALE        |
| DE APPR.   | CH                                                                                               | BK 117 SKIDTUBE ASSEMBLY                                                                                                                                                                                                                                                                             | NTS          |
| DATE       | 15.02.20                                                                                         | COPYRIGHT © 2007 BY DART AEROSPACE USA, INC<br>THIS DOCUMENT IS PRINTED AND CONTAINS ALL INFORMATION AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS<br>NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT<br>WRITTEN PERMISSION FROM DART AEROSPACE USA, INC. |              |

SH 137583



D3492-XX PLUG  
(SEE TABLE)

NAS1611 O-RING  
(SEE TABLE)



### D3492-XXX PLUG PARTS LIST

| QTY<br>-041 | QTY<br>-043 | QTY<br>-045 | QTY<br>-047 | QTY<br>-049 | QTY<br>-051 | QTY<br>-053 | QTY<br>-055 | PART NUMBER | DESCRIPTION   |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|
| X           |             |             |             |             |             |             |             | D3492-041   | PLUG ASSEMBLY |
|             | X           |             |             |             |             |             |             | D3492-043   | PLUG ASSEMBLY |
|             |             | X           |             |             |             |             |             | D3492-045   | PLUG ASSEMBLY |
|             |             |             | X           |             |             |             |             | D3492-047   | PLUG ASSEMBLY |
|             |             |             |             | X           |             |             |             | D3492-049   | PLUG ASSEMBLY |
|             |             |             |             |             | X           |             |             | D3492-051   | PLUG ASSEMBLY |
|             |             |             |             |             |             | X           |             | D3492-053   | PLUG ASSEMBLY |
|             |             |             |             |             |             |             | X           | D3492-055   | PLUG ASSEMBLY |
| 1           |             |             |             |             |             |             |             | D3492-1     | PLUG          |
|             | 1           |             |             |             |             |             |             | D3492-3     | PLUG          |
|             |             | 1           |             |             |             |             |             | D3492-5     | PLUG          |
|             |             |             | 1           |             |             |             |             | D3492-7     | PLUG          |
|             |             |             |             | 1           |             |             |             | D3492-9     | PLUG          |
|             |             |             |             |             | 1           |             |             | D3492-11    | PLUG          |
|             |             |             |             |             |             | 1           |             | D3492-13    | PLUG          |
|             |             |             |             |             |             |             | 1           | D3492-15    | PLUG          |
|             |             | 1           |             |             |             |             |             | NAS1611-005 | O-RING        |
|             |             |             | 1           |             |             |             |             | NAS1611-007 | O-RING        |
| 1           |             |             |             |             |             |             |             | NAS1611-010 | O-RING        |
|             |             |             |             |             |             | 1           |             | NAS1611-012 | O-RING        |
|             | 1           |             |             |             |             |             |             | NAS1611-013 | O-RING        |
|             |             |             |             |             | 1           |             | 1           | NAS1611-015 | O-RING        |
|             |             |             |             | 1           |             |             |             | NAS1611-016 | O-RING        |

#### NOTES:

1) O-RING: POSSIBLE SUPPLIER P/N: NAS1611-XXX OR PARKER 2-XXX

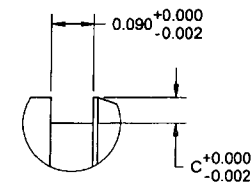
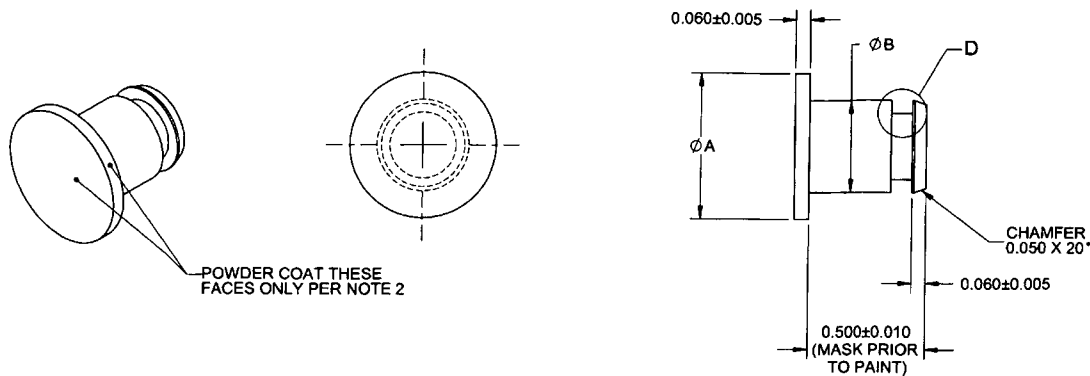
RELEASED  
2013-11-13

20151007

SH 137583

|            |                                                                           |                                                                                                                                                                                                                                                                             |              |
|------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| E          | ADD -055 PLUG ASSY & -15 PLUG                                             | AP                                                                                                                                                                                                                                                                          | 13.08.08     |
| D          | INCORPORATED DEO D3492-C-1. SHT 2 DIM C FOR -1 WAS 0.055. (SEE CAR11-048) | AJS                                                                                                                                                                                                                                                                         | 11.05.24     |
| C          | ADD -049/-051/-053, CHANGE DRAWING FORMAT                                 | PH                                                                                                                                                                                                                                                                          | 07.10.05     |
| B          | ADD -047; UPDATE DIM A FOR -045                                           | PH                                                                                                                                                                                                                                                                          | 06.05.11     |
| A          | NEW ISSUE                                                                 | PH                                                                                                                                                                                                                                                                          | 06.01.04     |
| REV.       | DESCRIPTION                                                               | BY                                                                                                                                                                                                                                                                          | DATE         |
| DESIGN     | PH                                                                        | DART AEROSPACE LTD<br>HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                           |              |
| DRAWN      | AP                                                                        |                                                                                                                                                                                                                                                                             |              |
| CHECKED    | AJS                                                                       | DRAWING NO.                                                                                                                                                                                                                                                                 | REV. E       |
| MFG. APPR. | DS                                                                        | D3492                                                                                                                                                                                                                                                                       | SHEET 1 OF 2 |
| APPROVED   | 149                                                                       | TITLE                                                                                                                                                                                                                                                                       | SCALE        |
| DE APPR.   | 149                                                                       | PLUG                                                                                                                                                                                                                                                                        | NTS          |
| DATE       | 13.08.08                                                                  | COPYRIGHT © 2007 BY DART AEROSPACE LTD<br>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE LOANED FOR ANY PURPOSES OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD. |              |

8 7 6 5 4 3 2 1



**DETAIL D**

**D3492-XX PLUG**

**D3492-XX PLUG MACHINING DETAILS**

| P/N      | A     | B     | C     | MATERIAL SPEC |
|----------|-------|-------|-------|---------------|
| D3492-1  | 0.625 | 0.394 | 0.050 | M6061T6R0.625 |
| D3492-3  | 0.750 | 0.582 | 0.045 | M6061T6R0.750 |
| D3492-5  | 0.375 | 0.188 | 0.045 | M6061T6R0.375 |
| D3492-7  | 0.500 | 0.270 | 0.045 | M6061T6R0.500 |
| D3492-9  | 0.938 | 0.750 | 0.045 | M6061T6R1.000 |
| D3492-11 | 0.850 | 0.664 | 0.045 | M6061T6R0.875 |
| D3492-13 | 0.750 | 0.510 | 0.045 | M6061T6R0.750 |
| D3492-15 | 0.850 | 0.640 | 0.050 | M6061T6R0.875 |



**NOTES:**

- 1) MATERIAL: ALUMINUM 5052-H32 OR 6061-T6 OR 1100-0 PER QQ-A-225/7 (5052) OR QQ-A-225/8 (6061) OR QQ-A-200/8 (6061) OR QQ-A-225/1 (1100) (REF. DART MATERIAL SPEC M6061T6R0.000)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
POWDER COAT WHITE GLOSS (4.3 5.1) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: N/A

RELEASED  
2013-11-13

|            |          |                                                                                                                                                                                                                                                                                |              |
|------------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| DESIGN     | PH       | <b>DART AEROSPACE LTD</b><br>HAWKESBURY, ONTARIO, CANADA                                                                                                                                                                                                                       |              |
| DRAWN      | AP       |                                                                                                                                                                                                                                                                                |              |
| CHECKED    | ALS      | DRAWING NO.                                                                                                                                                                                                                                                                    | REV. E       |
| MFG. APPR. | DS       | D3492                                                                                                                                                                                                                                                                          | SHEET 2 OF 2 |
| APPROVED   | AP       | TITLE                                                                                                                                                                                                                                                                          | SCALE        |
| DE APPR.   | AP       | PLUG                                                                                                                                                                                                                                                                           | 4:1          |
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